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Schools of Medicine and Pharmacy

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THE UNIVERSITY RECORD

Number 83 Fifty Cents a Year June, 1910

THE SCHOOL OF MEDICINE

FACULTY

FRANCIS PRESTON VENABLE, Ph.D., D.Sc., LL.D., President.
ISAAC HALL MANNING, M.D., *Dean and Professor of Physiology.*

CHARLES STAPLES MANGUM, A.B., M.D., *Professor of Anatomy.*
WILLIAM DEBERNIERE MACNIDER, M.D,, *Professor of Pharmacology and Bacteriology.*
DAVID HOUGH DOLLEY, A.M., M.D., *Professor of Histology and Pathology.*
HENRY VAN PETERS WILSON, Ph.D., *Professor of Zoology.*
EDWARD VERNON HOWELL, A.B., Ph.G., *Professor of Pharmacy.*
CHARLES HOLMES HERTY, Ph.D., *Smith Professor of General and Industrial Chemistry.*
WILLIAM CHAMBERS COKER, Ph.D., *Professor of Botany.*
*JAMES EDWARD LATTA, A.M., *Professor of Physics.*
ANDREW HENRY PATTERSON, A.M., *Professor of Physics.*
JAMES EDWARD MILLS, Ph.D., *Associate Professor of Physical Chemistry.*
ALVIN SAWYER WHEELER, Ph.D., *Associate Professor of Organic Chemistry.*
ROBERT BAKER LAWSON, M.D., *Associate Professor of Anatomy.*
†ROYALL OSCAR EUGENE DAVIS, Ph.D., *Associate Professor of Chemistry.*
HAMPDEN HILL, S.B., *Instructor in Chemistry.*
THOMAS JOSEPH MCMANIS, *Instructor in Physics.*
JOHN GROVER BEARD, Ph.G., *Instructor in Pharmacy.*
WILLIAM RUFUS EDMONDS, *Assistant in Physics.*

*Resigned, January, 1910.
†Resigned, November, 1909.

Alexander Littlejohn Feild, *Assistant in Physics.*
Junius Spaeth Koiner, Jr., *Assistant in Physics.*
John Edwin Ray, A.B., *Assistant in Bacteriology.*
Harry Clay Roberts, *Assistant in Anatomy.*
James William Farrior, M.E., *Assistant in Histology.*
Frank Wrenn, A.B., *Assistant in Histology.*
Roscoe Frederick Mauser, A.B., *Assistant in Physiological Chemistry.*
Duncan MacRae, S.B., *Assistant in Chemistry.*
Thomas Palmer Nash, Jr., *Assistant in Chemistry.*
William Mercer Oates, A.B., *Assistant in Chemistry.*
James Hill Wharton, *Assistant in Chemistry.*
Hal Fullerton Boatwright, A.B., *Assistant in Zoology.*
Orren Williams Hyman, *Assistant in Zoology.*
Elden Bayley, *Assistant in Botany.*

Foundation

Instruction in medicine is given in two distinct schools, one situated at the seat of the University, Chapel Hill, and the other in the city of Raleigh.

The school at Chapel Hill offers a preparatory or "premedical" course of one year in which special attention is given to the fundamental sciences of Medicine—Chemistry, Physics, and Biology—and a course in those studies which compose the first two years of the medical curriculum. The school was re-established in 1890. In 1898 it was admitted to membership in the Association of American Medical Colleges; in 1901 it was incorporated as an integral part of the University on the same footing as the graduate and other professional schools.

Owing to their inability properly and fully to equip the Medical Department of the University at Raleigh the trustees have been compelled to discontinue it. As the University School of Medicine at Chapel Hill is a member of the American Association of Medical Colleges such students as complete satisfactorily the two years course will find no difficulty in securing admission to a number of the best medical schools of the country for their third or fourth year's work and in obtaining their degrees.

The Curriculum

PREPARATORY OR PREMEDICAL COURSE

English 1, 3 hours	Chemistry 1, 4 hours
German A, 3 "	Chemistry 3, 2 "
Physics A, 3 "	Zoology 1, 3 "

The medical course is arranged in four sessions of nine months each as follows:

FIRST YEAR

Chemistry: Quantitative Analysis. Six hours a week until February 1: total, 96 hours.

Biological Chemistry. Nine hours a week from February 1 to the end of the term: total, 135 hours.

Anatomy: Comparative Anatomy. Six hours a week until February 1: total, 96 hours.

Human Anatomy 1: Nine hours a week throughout the year: total, 280 hours.

Microscopic Anatomy: Ten hours a week until March 1: total, 200 hours.

Embryology: Eight hours a week from March 1 to the end of the term: total, 96 hours.

Pharmacognosy and Pharmacy: six hours a week from February 1 to the end of the term: total, 90 hours.

SECOND YEAR

Physiology. Five hours a week throughout the year: total, 180 hours.

Biological Chemistry. Six hours a week until February 1: total, 96 hours.

Experimental Physiology. Five hours a week from February 1 to the end of the term: total, 75 hours.

Anatomy 2. Nine hours a week until February 1: total, 126 hours.

Anatomy 3. Six hours a week until January 1: total, 78 hours.

Bacteriology. Eight hours a week until February 1: total, 128 hours.

Pathology. Twelve hours a week from February 1 to the end of the term: total, 180 hours.

Pharmacology and Materia Medica. Nine hours a week from February 1 to the end of the term: total, 130 hours.

Minor Surgery and Normal Physical Diagnosis. Four hours a week from February 1 to the end of the term: total, 60 hours.

Experimental Pharmacology. Five hours a week from February 1 to the end of the term: total, 75 hours.

SUMMARY OF FIRST AND SECOND YEARS

Subjects	Hours.
Chemistry	327
Anatomy	880
Physiology	255
Bacteriology	128
Pathology	180
Pharmacology	155
Pharmacy	90
Minor Surgery and Physical Diagnosis	60
Total	2075 hours.

ANNOUNCEMENTS

Beginning with the session 1910-11 a course leading to the degree of Bachelor of Science will be offered. This course will consist of two years of undergraduate study and the two year medical course as now offered in the Department at Chapel Hill. The course of undergraduate study is as follows:

First Year	Second Year
English 1 (3)	English 2 (3)
Mathematics 1 (4)	Physics 1 (3)
Chemistry 1 (3)	Zoology 1 (3)
Botany 1 (3)	Chemistry 2 (3)
Select one: German 1 (3), French 1 (3), Latin 1 (4)	Select one: German 1 or 2 (3), French 1 or 2 (3), Latin 1 (4)
	Select one: Drawing 1 (2), History 1 (3)

ADMISSION

Candidates for admission and students already members of the School should present themselves to the President and Dean of the School for registration on *Monday*, *Tuesday*, or *Wednesday*, *September 5*, *6*, or *7*, *1910*, and *Monday* or *Tuesday*, *January 2* or *3*, *1911*.

ENTRANCE REQUIREMENTS

The requirements for admission to the premedical course are the same as for the College.

The requirements for admission into the Medical School are the satisfactory completion of one year in the University or certificates of its equivalent from an approved college. Students may be admitted to the second year of the Medical course upon furnishing certificates of having completed the first year course in an approved Medical School, or upon passing an examination upon the subjects studied in the first year. An examination will not be allowed until the candidate furnishes a certificate of having attended eighty per cent. of the hours required in the first year at an approved Medical School.

EXPENSES

The following are the charges a term payable at the beginning of each term in September and January respectively:

Tuition	$35.00
Fee for matriculation (registration, library, infirmary, etc.)	12.50
Total	$47.50

In addition the following fees will be charged for laboratory courses a term:

Chemistry 4A, $5.00; Chemistry 10, $5.00; Zoology 1, $3.00; Zoology 2, $5.00; Experimental Physiology and Pharmacology, $5.00; Pharmacy, $5.00; Bacteriology, $2.50; Pathology, $2.50; for the use of the microscope, 50c.

The laboratory fees are divided approximately equally among

the four terms. The total charge in the first year is between $55.00 and $59.00 a term, in the second year between $57.50 and $58.50 a term.

Good board is furnished at Commons Hall for $10 a month and at the University Inn for $15 a month. The rent of unfurnished rooms in the dormitories ranges from seventy-five cents to $2.75 a month for each occupant. For each room a charge of $2.00 a month is made for electric light and heat.

PRIZES AND SCHOLARSHIPS

The Harris Prize. (Established in 1895). Mrs. Thomas W. Harris offers in honor of the late Dr. Thomas W. Harris, a pocket case of instruments to that student who shall make the best grade in anatomy.

The Wood Scholarship. (Established in 1895). Mrs. Mary Sprunt Wood, of Wilmington, has founded, in memory of her husband, the late Dr. Thomas Fanning Wood, a scholarship covering the tuition fees.

THE GENERAL PLAN OF INSTRUCTION

In the arrangement of courses, in the plan of instruction, and in equipment, the effort is made to follow modern educational ideals. The practice of Medicine has moved rapidly from the domain of empiricism to that of an exact science. The development of the microscope, the invention of instruments of precision, and the advances in clinical chemistry and pharmacology require the highest technical training and skill for their successful practical application. The current literature dealing with problems of Hygiene, Medicine and Surgery are highly scientific and require a liberal scientific education for their application and unusual powers of analysis and judgment in the application of theories to practice.

From this has grown the necessity for extending the preliminary education and the medical curriculum, and modifying the methods of instruction. It is no longer profitable for the student with only an elementary education to pursue a medical course or to meet in competition the many more liberally educated physi-

cians of the day. In recognition of this a preparatory or premedical course is offered in which the student begins his scientific training in the subjects of Chemistry, Physics, and Biology, which are the fundamental sciences of medicine. Having completed this course the student enters upon the study of medicine with a broader foundation and the scientific spirit developed.

In the arrangement of the courses of study in the Medical School the attempt is made to follow their natural sequence. In the first year the student devotes his time to anatomical and chemical studies: Gross Human and Comparative Anatomy, Microscopic Anatomy, Embryology, Biological Chemistry, and Pharmacy, a thorough knowledge of which is necessary to the proper appreciation of the subjects to follow. In the second year Physiology is begun and completed. Anatomy, Biological Chemistry, Toxicology, and Bacteriology are completed in the first half of the year; Materia Medica, Pharmacology, Pathology, Normal Physical Diagnosis in the second half; so that at the expiration of the two years the student will have completed the fundamental branches of medicine, and be prepared to enter upon the study of the more practical subjects.

In the plan of instruction the laboratory method supplemented with a systematic course of lectures and demonstrations is pursued. The lectures and laboratory courses are, as far as possible, given contemporaneously, for in this way the student not only acquires technical skill, but it is believed, will gain a more thorough grasp of the subject. When advisable the classes are divided into small sections, so that the work of each student is under the direct supervision and close observation of the instructor. Frequent oral and written quizzes and a final examination are given in each subject, the object of which is to exact systematic and continuous work. An attendance upon class of 80 per cent. and a grade of 80 in each subject is required.

The School is well equipped. It has an adequate corps of trained instructors devoting their entire time to teaching and investigating, and those directly in charge of all purely medical subjects are graduates of Medical Schools. A building containing ten rooms with a floor space of six thousand square feet and a recently erected Anatomical Laboratory have been set apart for its use.

In the former the lecture rooms, the Bacteriological, Pathological, Histological, Physiological, and Pharmacological laboratories and the department library are located, all of which are well lighted and provided with modern conveniences and apparatus for the careful training of the student and the more advanced work of the instructor. The anatomical building is well equipped for dissection and the care of anatomal material. Instruction in Comparative Anatomy is given in Davie Hall and Chemistry in the chemical laboratory, both of which are described elsewhere. The University library, the gymnasium, and the laboratories of all departments of the University are open to the medical students who are encouraged to avail themselves of the unusual opportunities for scientific training and literary culture.

Finally, the healthful climate of Chapel Hill, the simple life of its people, the free intercourse between student and teacher, an opportunity to share in athletics and to mingle with a large number of students pursuing other professions offer advantages which cannot be over valued in the preparation for a professional life requiring not only technical skill, but an intimate and accurate knowledge of human nature, sympathy, and patience in the management of men.

COURSES OF INSTRUCTION

Chemistry

Professor Herty and Mr. Hill.

General Descriptive Chemistry. Premedical. The elements are studied in a systematic manner. The laws governing their combination and the compounds resulting are considered with appropriate reference to their occurrence and relationships to medicine. The latter part of the course is taken up with organic chemistry. Texts: McPherson's *Elementary Chemistry;* Remsen's *Organic Chemistry. Both terms, three hours.*

Laboratory fee, $1.25.

Associate Professor WHEELER.

Qualitative Analysis. Premedical. Laboratory work with lectures. The behavior of the elements and their compounds is studied in the laboratory. Practice is given in the analysis of known and unknown mixtures. Text: Venable and Wheeler's *Qualitative Chemical Analysis* and the professor's notes.

Associate Professor MILLS.

Quantitative Analysis. A brief course in gravimetric methods, followed by a more extended course in valemetric methods.

Laboratory notes. *Fall term, six hours.*
Laboratory fee, $5.00.

Associate Professor WHEELER.

Organic Chemistry. Elective; prerequisite, Chemistry 1 and 3. *Both terms, three hours.*
Laboratory fee, $4.00 a term.

Organic Chemistry; special preparations. Elective. *Both terms, laboratory, two hours.*
Laboratory fee, $6.00.

Professor MANNING and Associate Professor WHEELER.

Biological Chemistry and Toxicology. This course is designed to give the student laboratory training in organic chemistry and its application to the study of physiological problems. Students will perform a series of experiments bearing more or less directly on problems of metabolism, studying the proteins, carbohydrates, and fats, the digestive juices and their action, blood, urine, milk, and such tissues as will afford evidence of the general course of metabolic processes. They will prepare as many synthetical compounds illustrating the fundamental laws of organic chemistry as time will permit. The chemical behavior of poisons and their separation is studied in the laboratory. Each student

will be required to keep a laboratory note-book. Lectures discussing the theories of physiological Chemistry will be given contemporaneously with the laboratory course. Texts: Autenrieth; Haskins and McLeod. First year, spring term; second year, fall term.

Laboratory fee, $5.00 a term.

Physics

Professor Patterson.

Elementary Physics (Physics A). The fundamental facts of Physics are studied with some special attention to heat and electricity. Text-book, lectures, and laboratory work. *Both terms, three hours.*

Electricity and Magnetism (Physics 4). A study of the phenomena of electricity and magnetism, and their application in modern life, including the use of the X-rays, the rays of Radium, and other applications in Electrotherapeutics. Laboratory work required. Elective. *Both terms, two hours.*

Zoology

Professor Wilson.

General Zoology (Zoology 1): an introductory course giving an outline of the classification and structure of animals, with consideration of the fundamentals of histology, embryology, and physiology, and some consideration of biological theories; lectures with laboratory work. Text: Hertwig. Elective in the first year.

Laboratory fee, $3.00 a term.

Comparative Anatomy of Vertebrates (Zoology 2, first half). Dissection of vertebrate types: ascidian, amphioxus, cyclostome, selachian, teleost, reptile, bird, mammal. Text: Hertwig.

Laboratory fee, $5.00.

Botany

Professor Coker.

General Botany (Botany 1): an introduction to the structure and classification of plants; lectures with laboratory work. Elective in the first year.

Microscopic Anatomy

Professor Dolley, Messrs. Farrior and Wrenn.

This course is divided into three parts as follows:

1. Histology. Stress is laid on the proper conception of the fundamental tissues, which are studied, first in section, and then in fresh or macerated preparations, apart from the consideration of organs.

2. Microscopic Anatomy of Organs (excepting the central nervous system). Sections from all organs are supplied in sufficient number to cover the finer details of structure. Fresh and preserved abattoir material is furnished along with the sections.

   Throughout the course, each student stains and mounts his own sections and is required to make specified drawings and descriptions. By means of prepared slides, loaned to each student, details requiring special technique are shown, such as elastin stains, silver nitrate impregnations, injections, etc. Including mounts of fresh tissues and blood smears, a minimum of 200 slides is prepared in the laboratory. Lectures supplement the laboratory work, but a considerable part of this time is devoted to oral and written recitations. The final examination is both written and practical, the latter consisting of two parts, the diagnosis and the written description of slides.

3. Microscopic Technique. This portion of the course is given out of schedule hours. Under supervision, each student using several methods of fixation and both celloidin and

paraffin imbedding, carries 5 tissues from the raw state to the stained section, which must be approved by the instructor. Reference, Boehm-Davidoff-Huber.

Anatomy

Professor MANGUM, Associate Professor LAWSON, and Mr. ROBERTS.

The method of instruction is one of dissection and demonstration supplemented by lectures. Each student is required to dissect one-half of the body under the constant supervision of an instructor, who examines him daily upon the work done. Frequent practical examinations are held upon which stress is laid in order to enforce proper study of the cadaver.

1. In the First Year the lectures and demonstrations proceed by systems. The bones, the articulations, the descriptive anatomy and relations of the viscera are demonstrated to each student. During this year the student dissects one-fourth of the body.

2. In the Second Year the student finishes the dissection of the body and especial stress is laid upon topographical anatomy and the relations of anatomy to surgery. A final examination is held upon the entire subject of anatomy.

3. Neurology. Special laboratory study of the gross and microscopic anatomy of the cord and encephalon.
   Text: Cunningham or Morris; Cunningham's Manual of Practical Anatomy; Whitehead's Anatomy of the Brain.

4. Vertebrate Embryology. The lectures embrace the phenomena of cell division, ovulation and impregnation, and the development of the human body to the end of the foetal stage. In the laboratory the student verifies the facts by the study of organogeny in the chick and in the pig and the foetal membranes in mammals.
   Texts: Bailey and Miller; Marshall; Minot's *Laboratory Text*.

Physiology

Professor MANNING.

This course consists of lectures and laboratory work. In the lectures a brief account of general and cell physiology is given as an introduction; then follows a detailed discussion of the facts and theories of human physiology with a brief account of such experiments on the lower animals and such clinical observations and experiments as bear upon the subjects. Contemporaneously with the lectures, a laboratory course is given in which the student learns the methods of experimental physiology and performs such experiments as will demonstrate the more obvious facts. Texts: Howell; Stewart; Porter.

Materia Medica and Pharmacology

Professor MACNIDER.

1. Materia Medica. The general consideration of this subject is given in the first year of the medical curriculum. In the second year the important drugs are studied in groups, the classification depending upon their physiological action. Emphasis is given to the most useful preparations of the most important drugs, and their physiological action is studied in detail.

2. Prescription Writing. As early as possible in the course the student's attention is directed to the logical application of various drugs to the relief of morbid conditions. Hypothetical conditions are discussed, and each student writes one or more prescriptions and gives his reasons for the use of the various drugs he employs. The prescriptions are discussed and criticised by the students and the instructor.

9. Pharmacodynamics. This part of the general course in Pharmacology consists in a careful and accurate study of the action of practically all of the more important drugs on the lower animals. For this work, the higher animals, such as the cat and dog, are chiefly used. The class is divided

into groups of two or four, and the experimental work is conducted by the students. Each student is required to hand in to the instructor, at the completion of the course, a laboratory note book containing a detailed account of each experiment, an explanation of the results obtained, and the tracings made during the experiments. Oral and written recitations are frequently held. Text: Wilcox, Pharmacology and Therapeutics. Reference: Sollmann, Cushny and Wood.

Pathology

Professor Dolley assisted by Professor MacNider.

1. Pathological Histology. General Pathological processes are first studied, followed by the special pathology of the different organs and systems. Each student receives and is required to stain, mount, and study about 250 sections, and to draw or describe those designated by the instructor. In addition, rarer lesions and those requiring special technique are shown by demonstration slides, and at frequent intervals tumors are given out for diagnosis. The list of sections illustrative of general pathology, particularly tumors, is made as complete as practicable, and in special pathology, cardiac and vascular diseases, typhoid fever, and the various forms of pneumonia, of cirrhosis of the liver, and of nephritis, are emphasized. The class is encouraged to study gross appearances in museum material in connection with sections. Oral and written recitations are held frequently. The examination is both written and practical. Texts: Delafield and Pruden.

Professor MacNider.

2. Bacteriology. The student learns by practical experience the methods of cultivating, staining, and identifying the principal pathogenic bacteria. A few non-pathogenic and safrophytic forms are studied. The pathological significance of the various forms is explained by lectures, and the pathogenicity of some of the forms is determined by

inoculation experiments performed by the class. At intervals during the course unknown organisms are given for identification. In addition to this, each student is required to isolate from the air, water, fecal matter, or pus two organisms and determine their species. The latter part of the course is devoted to the bacteriological study of milk and water. Text: Jordan. Reference: Park and McFarland.

Minor Surgery and Physical Diagnosis

Professor MacNider.

The class practices the application of bandages, learns the modern methods of dressing wounds. A short course in Physical Diagnosis is given. Text: Davis on Bandaging.

Pharmacy

Professor Howell.

The course in Pharmacy will consist in laboratory work supplemented by lectures. The student will have an opportunity to study the crude drugs and their official prescriptions and doses, and to familiarize himself with pharmaceutical methods in the preparation of official drugs, in writing and compounding prescriptions.

SCHOOL OF PHARMACY

FACULTY

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THOMAS PALMER NASH, JR., *Assistant in Chemistry.*
DUNCAN MACRAE, S.B., *Assistant in Chemistry.*
WILLIAM MERCER OATES, A.B., *Assistant in Chemistry.*
JAMES HILL WHARTON, *Assistant in Chemistry.*
HAL FULLERTON BOATWRIGHT, A.B., *Assistant in Zoology.*
ORREN WILLIAMS HYMAN, *Assistant in Zoology.*
ELDEN BAYLEY, *Assistant in Botany.*
WILLIAM RUFUS EDMONDS, *Assistant in Physics.*
ALEXANDER LITTLEJOHN FEILD, *Assistant in Physics.*
JUNIUS SPAETH KOINER, JR., *Assistant in Physics.*

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*Resigned, November, 1909.

FOUNDATION

The school of Pharmacy was founded in 1897 and was opened for students in September of that year. Its location at the seat of the University assures to the students the most modern scientific instruction with all the laboratory facilities of the undergraduate department, as well as the courses of instruction in allied branches. These opportunities will meet the requirements of a large number of students who were compelled heretofore to obtain their pharmaceutical education in other states. Briefly stated, the advantages are as follows:

1. Thorough careful, *individual* training.
2. The practical experience derived from active work in the laboratories.
3. Intimate association with the other departments of the University, to all of which the student of pharmacy has access, and the daily contact with students pursuing various branches of learning.
4. The use of the large library and reading room and the well equipped gymnasium.
5. The comparatively small cost at which a two-years' course may be obtained.
6. The length of the course, which consists of two sessions of nine months each,—nearly a fourth longer than in many of the colleges of pharmacy.

The success of the students of this school in their examinations before the State boards has been very gratifying. Students of this School have been applicants before the State boards of Maryland, Pennsylvania and North Carolina. None of the graduates of this School applying for license before State boards has failed to pass the examination.

ADMISSION

Candidates for admission into the School of Pharmacy should present themselves on the same days and at the same hours with candidates for admission into the college. For the next academic year these days will be *Monday*, *Tuesday*, or *Wednesday*, *September 5*, *6*, or *7*, *1910*, and *Monday* or *Tuesday*, *January 2* or *3*, *1911*.

The session of the School of Pharmacy is of the same length as the College year, beginning *September 5, 1910* and ending *June 1, 1911.*

Candidates for the degree Ph. G. must be, on entering, at least 17 years old, and must have completed a high school course of study.

The members of the School of Pharmacy enjoy all the privileges extended to other students in the University.

EXPENSES

The charges for each term are payable at the beginning of the term. They are as follows:

Tuition ....$30.00.
Registration and incidental fees..... 12.50.

There are additional fees as follows:

First-year

Chemistry 1 (each term).....$1.25.
Physics A (each term)..... .50.

Second-year

Chemistry 9 (Fall term).....$7.50.
Chemistry 10 (Spring term)..... 2.50.
Prescription Course.....10.00.

The students of Pharmacy are entitled to the use of the gymnasium, the library and reading room, and, in case of sickness, to medical attention and the use of the infirmary.

Good board is furnished at Commons Hall at $10.00 a month and at the University Inn for $15.00 a month. The rent of unfurnished rooms ranges from 65 cents to $2.75 a month. For each room is made a charge of $2.00 a month for electric light and heating.

PRIZES

The Bradham Prize, offered by Mr. C. D. Bradham, of Newbern, N. C., will be given to the student making the highest general average during the two years of study.

The Gilpin Langdon prize, offered by Messrs. Gilpin Langdon & Co., of Baltimore, Md. will be given to the student making the best line of preparations in the pharmaceutical laboratory.

Prizes will also be given:

1. For the best thesis.
2. For the best collection of native medicinal herbs.
3. For the best exhibit of chemical salts made by a second year student.
4. For the best work in the recognition of materia medica specimens.
5. To the student recognizing the largest number of pharmaceutical preparations.

EXAMINATIONS

Final examinations are held at the end of each term on the subjects embraced in the course.

Quizzes upon the different branches are held regularly. Specimen quizzes upon Materia Medica, Chemistry, and Pharmacy are held once a week, and consist in the recognition and correct writing of the official names of the specimens presented.

Students are required to make an average of 70 per cent. on all examinations and quizzes.

COURSES LEADING TO THE DEGREE OF GRADUATE OF PHARMACY

In order to be recommended for the degree of Graduate of Pharmacy (Ph.G.), the student must have completed with credit the course of study outlined below. This course extends over two sessions of nine months each. The student must have completed the work of both sessions in the School of Pharmacy of this University, or of one session (the second) here after one in some other recognized school of Pharmacy. He must obtain satisfactory marking in attendance, make a general average of 70 per cent. in the various branches, and submit a satisfactory thesis. The thesis must be an original essay embodying the results of the student's personal research in some branch of Pharmacy, which he has prosecuted under the direction of the professor who assigned

him the subject. The subject of such thesis must be announced on or before February 1 to the Dean of the Faculty. On May 2 the thesis shall be read before the Dean of the School, subject to criticism and correction. The corrected and approved thesis must be handed to the Registrar in type-written form on or before May 15. It will be published at the discretion of the Dean of the School. He must also have had a practical experience of at least four years with some qualified Pharmacist in a dispensing store. Satisfactory evidence on this point must be submitted to the Dean of the School, and a certificate deposited with the Registrar on or before May 15. Students who have not had the full four years' experience will be permitted to stand examinations for graduation; but their diplomas will be witheld until they shall have satisfied this requirement. Of the three years of experience required for license by the State Board of Pharmacy, the work done in the Pharmaceutical laboratory will count for one and only one.

First year

Pharmacy 1 (5)
Pharmacy 4 (4)
Elementary Physics A (2)
Chemistry 1 (3)

Second Year

Pharmacy 2 (5)
Pharmacy 5 (8)
Materia Medica (3)
Materia Medica and Pharmacology (5)
Chemistry 9 (3)
Chemistry 10 (3)

COURSES OF INSTRUCTION

Pharmacy

Professor HOWELL.

1. Theory and Practice of Pharmacy. The course consists of lectures upon the following subjects, with practical demonstrations and the employment of proper apparatus when-

ever necessary; metrology, comminution, heat, evaporation, distillation, sublimation; fusion, calcination, granulation, oxidation, reduction, etc.; solution of solids, liquids, and gases; deliquescence, efflorescence, etc.; colation, filtration, decolorization, clarification, precipitation, etc.; macration, expression, infusion, decoction, etc.; percolation, and study of the following: waters, syrups, honeys, glycerites, mucilages, mixtures, spirits, elixirs, liniments, collodians, tinctures, wines, vinigars, and fluid extracts. Text: Remington, *Theory and Practice of Pharmacy*. First year. *Both terms, five hours.*

2. Theory and Practice of Pharmacy. The official forms and preparations of drugs are taken up in detail. Beginning with the inorganic compounds, the salts are considered with regard to their commercial qualities and pharmaceutical uses and preparations. The organic compounds are studied, commencing with the salts of the organic acids and passing to the natural and organic compounds. Second year. *Both terms, five hours.*

3. Lectures on Pharmaceutical Botany. This course is preparatory to the study of Materia Medica, and takes up the study of the flower, the various topics of fruits, seeds, etc., and a careful study of the descriptive terms as applied to leaves, stems, and roots. Inspection is given in the gathering and proper mounting of specimens of the official herbs that grow in this vicinity. First year. *Spring term, two hours.*

4. Operative Pharmacy: a practical course with laboratory work. First year. *Both terms, four hours.*

5. Operative Pharmcay: a continuation of course 4. Second year. *Both terms, two hours.*

Materia Medica and Pharmacology

Professor Howell.

1. Materia Medica. Lectures on the geographical and botanical sources of drugs; descriptions and uses of the same,

together with their preparation and doses. Opportunity is given to the student to familiarize himself with most of the crude drugs and their preparations. Text: White and Wilcox. *Fall term, three hours.*

Professor MacNider.

2. Materia Medica and Pharmacology. This course is devoted to the study of the origin and constitution of remedial measures, their preparations and doses; and in particular, their physiological action and the indications for their rational use. Opportunity will be given to students to familiarize themselves with the more important crude drugs and their preparations. Instruction is given by means of lectures, recitations and demonstrations. The lectures intended to accompany the work in Toxicology are given as a part of the course in Materia Medica.

Physics

Professor Patterson.

Elementary Physics (Physics A). The fundamental facts of Physics are studied with some special reference to heat and electricity. Text-book, lectures and laboratory work. First year. *Both terms, three hours.*

Chemistry

Professor Herty and Mr. Hill.

1. General Descriptive Chemistry. The elements are studied in a systematic manner. The laws governing their combination, and the compounds resulting, are considered with appropriate reference to their occurrence and relationships to medicine. The latter part of the course is taken up with organic chemistry. Texts: Hollman's *Inorganic Chemistry*, and Remsen's *Organic Chemistry*, supplemented by lectures and quizzes. First year. *Both terms: lectures, three hours; laboratory, two hours (fall term).*

Associate Professor WHEELER.

9. Qualitative Analysis and Toxicology: laboratory work with lectures. The behavior of the elements and their compounds is studied in the laboratory. Practice is given in the analysis of known and unknown mixtures with special reference to the detection of poisons and determination of the purity of drugs. Text: Venable and Wheeler's *Qualitative Chemical Analysis* and the instructor's notes. Second year. *Spring term, three hours.*

OPTIONAL COURSES

The following courses are not required of students in Pharmacy, but may be elected profitably.

Elementary Physiology

Professor MACNIDER.

The study of Physiology is begun in the spring term of the first year, during which the physiology of digestion, the digestive glands, blood, respiration, metabolism, excretion, and animal heat are considered in lectures illustrated by experiments. The study is continued in the fall term of the second year by the consideration of the physiology of the muscles and of the nervous system. During this term also the student learns the methods of experimental physiology by means of class work in the laboratory. Texts: *American Text book*, Stewart, or Kirke. *Both terms, three hours.*

Zoology

Professor WILSON.

General Zoology. An introductory course giving an outline of the classification and structure of animals, with consideration of the fundamentals of histology, embryology, and physiology, and some consideration of biological theories; lectures with laboratory work. Text: Hertwig. *Both terms, two hours.*

Botany

Associate Professor COKER.

General Introduction to Systematic Botany, with special attention to medical plants; laboratory and field work with recitations. *Spring term, three hours.*

Prescription Filling

Professor HOWELL.

In order that students may gain experience in prescription filling, a course in the practical everyday work of a drug store and in selling poisons and filling prescriptions is given. The prescriptions selected are those that will give the largest amount of practical experience. For this course a fee of ten dollars is required, to cover the cost of ingredients, bottles, labels, etc. *Both terms, at least two hours.*

Chemistry

Professor HERTY.

Industrial Chemistry. Lectures. The application of chemistry to the arts and industries. This course includes metallurgy, glass making, pottery, (*fall term*); food, clothing, building materials, explosives, photography, etc., (*Spring term*) *Both terms, three hours.*

Agricultural Chemistry. Lectures. This course includes the chemistry of the plant and the soil, and the discussion of plant food, etc. Many specimens have been collected in the Industrial Museum to illustrate this course and the preceeding one.

Dr. DAVIS.

Quantitative Analysis and Assaying. Laboratory work. This course is intended to give the student a thorough grounding in analytical methods and manipulations. *Three hours.*

Professor HERTY.

Quantitative Analysis. Laboratory work. The student in this course is led further into the study and practice of analytical methods. The work may take any special direction desired by him, fitting him to be an agricultural chemist, iron chemist, manufacturing chemist, physician, druggist, or teacher of chemistry. Encouragement is given to the student to make original researches. *Five hours.*

Mr. EATON.

Determinative Mineralogy. Lectures with laboratory work. Dana's *Text-Book of Mineralogy*. *Both terms, two hours.*

Bacteriology

Professor MACNIDER.

The student learns by practical experience the methods of cultivating, staining, and identifying the principal bacteria, and their pathological significance is explained by lectures and demonstrations by inoculation of animals. In this way the chief pathogenic bacteria are studied in pure culture on the various media, after which the methods of obtaining pure culture from mixtures of bacteria are learned. The necessary manipulations are carried out by students, who thus obtain a practical knowledge of the subject which can be gained in no other way. *Full term, six hours.*

Students in Pharmacy have also the privilege of attending any of the regular academic courses.

THE PHARMACEUTICAL LABORATORY

OFFICERS

EDWARD VERNON HOWELL, A.B., PH.G., DIRECTOR and *Professor of Pharmacy.*

JOHN GROVER BEARD, PH.G., *Instructor in the Pharmaceutical Laboratory.*

The rooms of the Pharmaceutical Laboratory are admirably adapted to this purpose. They are conveniently situated on the first floor, are well lighted and well equipped with water, electric lights, and gas. To each student is assigned a desk, provided with lock and key, and containing all the apparatus necesssary for the every day work of the pharmacist. In the store room is kept a supply of materials for practical work, as well as the apparatus for the more complex operations. Ample space is provided for work an the prescription counter, where practical instruction in the compounding and dispensing of prescriptions is given.

A small deposit fee is required to cover the cost of breakage of apparatus. At the end of the session this fee will be returned, less the amount of breakage.

OTHER LABORATORIES

The laboratories of Physics, Chemistry, and Biology are open to students in Pharmacy. These laboratories are all equipped with the most approved apparatus for experimentation and illustration of lectures.

READING ROOM AND LIBRARY

The Pharmaceutical School is provided with a well selected library and with a reading room, inaugurated by the class of 1897, in which are filed a large number of medical and pharmaceutical journals.

In addition to these advantages, students of this department enjoy the privileges of the University reading room, in which are filed all the leading newspapers and magazines, and free access to the University Library, which numbers fifty-four thousand volumes and seventeen thousand pamphlets.

Students in Medicine

Adams, Rayford Kennedy,	Second,	Monroe.
Alexander, Samuel Allen,	First,	Creswell.
Austin, Henry Exum,	Second,	Clayton.
Barbee, George Speight,	Fourth,	Morrisville.
Barefoot, Mordecai Lee,	Fourth,	Dunn.
Battle, George Cullen,	Second,	Rocky Mount.
Beam, Russsell S.,	Second,	Rutherfordton.
Beard, Grover Cleveland,	Second,	Stedman.
Beavers, John Thomas,	First,	Durham.
Bernard, Holman,	Third,	Raleigh.
Blalock, Burman Karl,	Second,	Norwood.
Boatwright, Hal Fullerton,	Second,	Wilmington.
A. B., 1909.		
Brides, Arthur Edward,	Fourth,	Brockton, Mass.
Buchanan, Sidney Eli,	Second,	Concord.
Campbell, Alton Cook,	Fourth,	Jonesboro.
Cannon, William Franklin, Jr.,	Second,	Concord.
Cocke, Eugene Rankin,	First,	Asheville.
Daniels, Ralph Livingston,	Second,	Oriental.
Davis, Joseph Franklin,	Second,	Clendon.
Drane, Robert,	First,	Edenton.
Eason, Oscar,	Fourth,	Archer.
Elder, David Lane,	First,	Trinity.
Farrior, James William,	Second,	Venansville.
M. E., 1907, Cornell University.		
Fleming, William Le Roy,	Fourth,	Hassell.
Flowers, Charles Ely,	First,	Cash Corner.
Gaston, David Holder,	First,	Duncan, S. C.
Gentry, George Wesley,	Fourth,	Roxboro.
Gold, Charles Fortune,	Fourth,	Shelby.
Graul, Frederick Workman,	Second,	Wernersville, Pa.
Hardee, Walter Pirson,	Second,	Stem.
Harper, James Madison,	Fourth,	Kinston.
Harris, Jack Hawley,	First,	Raleigh.
Hartsell, Joseph Albert,	Second,	Concord.
Hedgpeth, Harry Malcomb,	First,	Kenly.

Hemphill, Clyd Hoke,	First,	Nebo.
Henderson, Clair Crouse,	First,	Lowell.
Hester, Joseph Robert,	Fourth,	Wendell.
Hinnant, Milford,	Second,	Selma.
Johnson, Wiley Carroll,	Second,	Canton.
Jones, Herbert Pryor,	Second,	Rutherford College
Jones, John Paul,	Second,	Franklin.
King, Ogden Doremus,	First,	Albemarle.
Littleton, Henry Ward,	Second,	Albemarle.
Ph. B., 1906.		
Lucas, Philip Edward,	First,	Currie.
McGoogan, Benjamin Jane,	Second,	Rennert.
Mann, Ira Thurman,	Second,	High Point.
Mauser, Roscoe Frederick,	Second,	Hickory.
A. B., 1908, Lenoir College.		
Moore, John Walker,	Second,	McConnells, S. C.
B. S., 1906, Davidson College.		
Moser, William Dixter,	Fourth,	Rock Creek.
Moses, Herbert Henry,	First,	La Follette, Tenn.
Powell, Henry Hubert,	Third,	Auburn.
Ray, Clarence Broadway,	First,	Waynesville.
Ray, John Edwin, Jr.,	Second,	Raleigh.
Roberts, Harry Clay,	Second,	Rowland.
Rodriguez, Adolfo Bartolome,	Fourth,	Sangua la Grande,
Shaw, William Alger,	Third,	Raleigh [Cuba.
Smith, Lawrence Jackson,	Second,	Liberty.
Speight, James Ambler,	First,	Whitakers.
Stevens, William Leary,	Second,	Indian Town.
Stockdon, Walter Irving,	First,	Glendon.
Strickland, Jesse Armed,	Fourth,	Wilson.
Thompson, Sanford Webb,	First,	Falls.
Walker, Duncan De Vane,	Second,	Warsaw.
Weatherly, Talmage Bryan,	Second,	Gorman.
Weaver, Arthur Hale,	First,	Weaverville.
West, Louis Nelson,	Second,	Raleigh.
Wheeler, George Alexander,	First,	Higgins.
Wilkins, John William,	First,	Rose Hill.
Williams, Lester Alonzo,	First,	Old Fort.

Wilson, Oscar Britton,	Second,	Rock Hill, S. C.
Withers, George Lee,	First,	Davidson.
Wooten, Amos Monroe,	Fourth,	Fountafn.
Wrenn, Frank,	Second,	Siler City.
A. B., 1907, Trinity College.		
Wyatt, Wortham,	First,	Wadesboro.
A. B., 1908.		

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STUDENTS IN PHARMACY

Coleman, Henry Grady,	First,	Silvert, S. C.
Dupree, Loroman Cleveland,	First,	Dunn.
Finley, Gray Bynum,	Second,	Marion.
Foster, Caney,	First,	Leicester.
Gaddy, Henry Moody,	Second,	Red Springs.
Godfrey, Paul Vernon,	First,	Elizabeth City.
Gwyn, Hugh Littleton,	First,	Mount Airy.
Harris, Walter Chester Field,	First,	Hope Mills.
Hearn, Bunn,	First,	Chapel Hill.
Hesterly, Louis Enloe,	First,	Hendersonville.
Hoffman, Joseph Filson, Jr.,	First,	High Point.
Horne, Charles James O'Hagan,	Second,	Greenville.
Hunnicutt, Fabius Jefferson,	First,	Raleigh.
Hutchins, James Alexander,	Second,	Chapel Hill,
Kyser, Howell Royster,	First,	Rocky Mount.
Linn, Luther Alexander,	First,	Landis.
Mann, Charles Lester,	First,	Franklin.
Murray, John Edward,	Second,	Durham.
Norwood, Eston Gibbons,	First,	Chapel Hill.
Streeen, Jennings Buren,	First,	Rockingham.
Porro, Miguel Alberto	Second,	Camaguey, Cuba.
Reed, Charles Wingate	First,	Washington, D.C.
Rhineheardt, Charles Bais,	First,	Asheville.
Rhyne, Wayne Frank,	Second,	Gastonia.
Ross, Guy Raymond,	First,	Ayden.
Smith, Claud Norman,	First,	Durham.
Strayhorn, William Fletcher,	First,	Durham.
Taylor, Paul,	First,	Kinston.

Toms, Bate Carpenter,	First,	Rutherfordton.
Van Poole, Carlmon Marcellus, Jr.,	First,	Salisbury.
Waters, George Walter, Jr.	First,	Goldsboro.
Webb, Richard Kendrick,	First,	Shelby.
White, Walter Rodwell,	Second,	Warrenton.
Wilkerson, Joseph Lawrence, Jr.,	First,	Durham.
Williams, John Claud,	First,	Godwin.
Williams, Richard Fleet,	First,	Hiddenite.
Wilson, William Brown,	First,	Ashford.
Zuckerman, Isaac Louis,	First,	Durham.

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